



Sorbacal<sup>®</sup> SPS: the best solution  
for acid gas pollution



The choice for innovative flue  
gas treatment



## Performance and ease of use

Sorbacal® SPS is an engineered hydrated lime characterized by high porosity and high surface area to enhance acid gas capture. It has been specifically formulated to remove acidic components from flue gas with greater efficiency, while optimizing the total cost of use. Its implementation requires low or no capital investment.

In the form of a dry, white, ready-to-use powder, Sorbacal® SPS is used predominantly with dry sorbent injection (DSI) as the main gas cleaning technology, or as a way to boost an existing process, such as a semi-dry or a wet scrubber.

Sorbacal® SPS provides superior performance for all acid gases, but is particularly effective for SO<sub>2</sub> capture.

### Main benefits

- Increased acidic gas mitigation capacity for SO<sub>2</sub>, SO<sub>3</sub>, HCl and HF
- No additional investment in capital equipment necessary: no switching cost for existing hydrated lime users
- Low footprint and limited downtime for installation
- Numerous operational benefits: corrosion protection, heat efficiency improvements, reduced air preheater fouling, reduced minimum operating temperature for selective catalytic reduction systems
- SO<sub>3</sub> mitigation for blue plume control and activated carbon protection for better mercury capture
- Single dosing system for acid gas and mercury control by using Sorbacal® SPS blends with activated carbon
- Improved byproduct chemistry and value compared to using sodium sorbents
- Reduced metals and chlorides in the purge stream of wet flue-gas desulfurization (FGD) systems

## Application areas

- Solid fuel users, such as coal, lignite or biomass power generation units
- Industrial production processes (glass, cement, metals, etc.)
- Waste to energy



### FSI and/or DSI process



**Main pollutants neutralized**

SO<sub>2</sub>  
SO<sub>3</sub>  
HCl  
HF  
Selenium

FSI: Furnace Sorbent Injection  
DSI: Dry Sorbent Injection

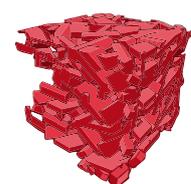
# Advanced technology available to everyone

The result of an intensive research program, this innovative, patented product is the most recent development in calcium sorbents on the market. Providing the most effective acid gas removal performance, Sorbocal® SPS allows less sorbent to be injected, thus reducing the overall load on the particulate collection device. The optimized particle size provides excellent flowability and handling characteristics, and aids in collecting particles in either a baghouse filter (BHF) or electrostatic precipitator (ESP). Sorbocal® SPS also boasts lower electrical resistivity, which makes it more compatible with ESPs, unlike any other calcium sorbent on the market.

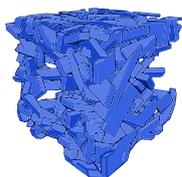
## Wide usage flexibility

As an effective control strategy for all acid gas pollutants, Sorbocal® SPS can be used in the following applications:

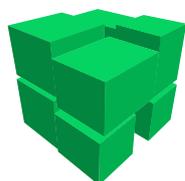
- DSI as the main SO<sub>2</sub> control technology, even when moderate-to-high removals are needed
- DSI as a boost to an existing flue gas treatment (FGT) system
- Circulating dry scrubber (CDS) technology with demonstrated improved performance in specific conditions
- Dry injection over a wide range of temperatures: from 120 to 2,000°F (50 to 1,100°C)
- Both baghouse filter and ESP particulate control devices, with high effectiveness
- Existing DSI systems without added expense
- Existing sodium systems without the need for on-site milling



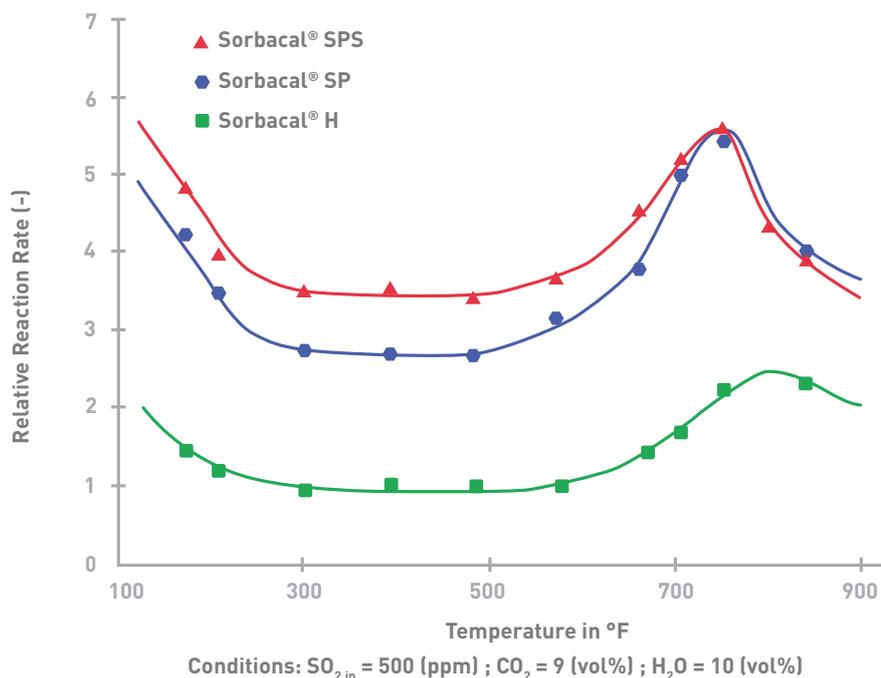
Sorbocal® SPS



Sorbocal® SP



Sorbocal® H



# Your benefits

Sorbacal® SPS provides major benefits in nearly all FGT setups.

## More efficient

- Lowest usage of any calcium product on the market today, reducing consumption by 30% or more compared to other FGT-grade hydrated limes
- Better neutralization of SO<sub>2</sub>, SO<sub>3</sub>, HCl, and HF
- Proven effectiveness for the capture of gas-phase selenium compounds
- Flexibility: Injection optimization with variable load conditions
- Better collection with an ESP, due to lower resistivity, optimized particle size and reduced mass loading

## More practical

- Can be used with an existing sorbent injection system
- Ready for use – no milling required
- Multiple production facilities, very reliable supply
- Increases storage capacity, reducing the number of shipments
- Easier stabilization and higher value of byproducts

## More economical

- Increased flexibility for future acid-gas reduction strategies
- Option of optimization via several injection locations
- Lowest total cost of use (sorbent, disposal, equipment operations & maintenance)

## Sorbacal® SPS in practice

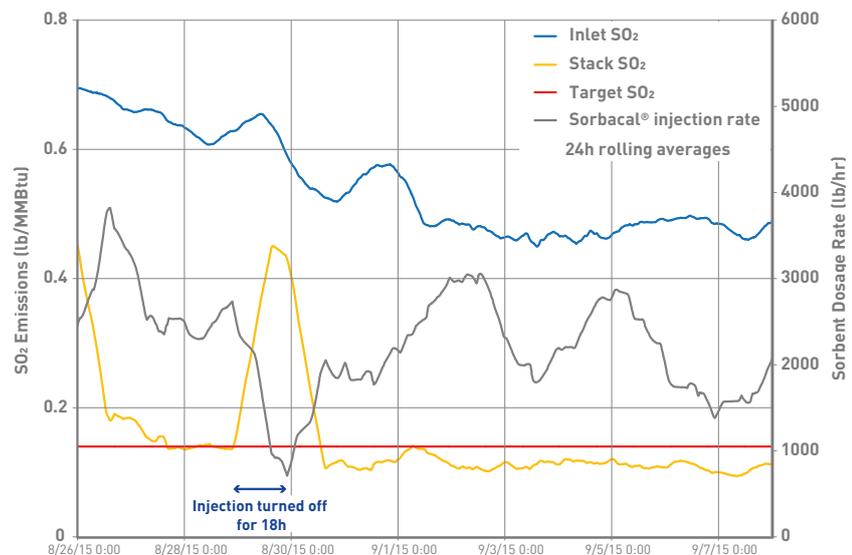
### The challenge

A coal-fired electricity-generating utility needed an SO<sub>2</sub> solution to comply with future regulations specifying 60-80% SO<sub>2</sub> removal, depending on the coal sulfur content. The facility had no SO<sub>2</sub> controls and used an ESP for particulate control. Sodium sorbents were not a good option due to byproduct disposal concerns. Therefore, a low capital cost, calcium-based solution was desirable.

### The Lhoist solution

A ten-day test program was conducted to demonstrate that Sorbacal® SPS could meet the future SO<sub>2</sub> emission requirements without having a detrimental impact on the ESP. Lhoist recommended injection of Sorbacal® SPS at the air preheater inlet.

In the graph, the orange line represents controlled SO<sub>2</sub> emissions, while the blue line represents the SO<sub>2</sub> emissions upstream of the sorbent injection location. The red line indicates the future SO<sub>2</sub> emission limit based on a 30-day rolling average. The grey line shows the injection rates, which were manually controlled to maintain SO<sub>2</sub> emission compliance across a rolling average. The SO<sub>2</sub> limit was successfully achieved over the test period. Additionally, Sorbacal® SPS had only a minor impact on ESP operation. Opacity only increased by 1-2% throughout the test period, which the client deemed acceptable.



### The benefits

Dry sorbent injection with Sorbacal® SPS not only provided a calcium-based solution to meet future SO<sub>2</sub> emissions requirements, it also had minimal impacts on the balance of the plant, including ESP operation. Additionally, the Sorbacal® SPS byproducts did not cause any disposal concerns in regards to landfilling.

For more information about this case visit the download center at [www.sorbacal.us](http://www.sorbacal.us)

# International expertise at your service

With global expertise acquired over two decades, our local experts support you both in designing your treatment solution and in using Sorbacal® SPS.

## Design

- Modeling and estimating sorbent consumption and byproduct production
- Running computer simulation of product dispersion (computational fluid dynamic modeling)
- Determining the best injection conditions

## Use

- On-site testing
- Performance optimization
- Periodic byproduct analysis for performance monitoring
- Infrasonic technology to minimize operations & maintenance associated with conveying-line scaling, plugging and dosing
- Reliable logistics services



Infrasonic equipment

## Infrasonic technology

This technology minimizes the formation of deposits when sorbents are transferred pneumatically. It emits low-frequency sound waves into the pneumatic conveying lines to ensure solid particles stay suspended in the airflow.

Lhoist has implemented the infrasonic equipment successfully at more than 25 client units, as well as its own facilities. This proprietary solution is customized to suit each client's specific Sorbacal® SPS injection setup.



**Sorbacal® SPS**, a product developed and patented by Lhoist Recherche et Développement S.A.

# Lhoist, your global partner in flue gas treatment

Lhoist is a multi-national company specialized in hydrated lime, quick lime, dolomitic lime and mineral products. The diversity of our product range, along with the worldwide presence of our industrial sites, enables our group to play a leading partner role across many industrial sectors.

## What Lhoist offers

### EXPERTISE

providing reliable and effective solutions



### SORBENTS

meeting your specific needs



### SERVICES

offering customized technical assistance and logistics support



Discover more,  
[www.sorbacal.us](http://www.sorbacal.us)



[www.lhoist.us](http://www.lhoist.us)